

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-23 (canceled).

24. (original): A mixer having a first input comprising a first frequency f_1 and a second input comprising a second frequency f_2 , said mixer comprising:

mixing means for mixing the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- , where:

$$f_+ = f_1 + f_2,$$

$$f_- = \text{absolute value } (f_1 - f_2); \text{ and}$$

an active load comprising a Field Effect Transistor (FET),

wherein said active load is electrically connected to said mixing means and provides a variable load on said mixing means.

25. (original): A mixer according to claim 24, wherein said FET comprises a MOSFET.

26. (currently amended): A doubler comprising:

doubling means for outputting an output frequency which is double an input frequency;

mixing means; and

a by-pass switch comprising a Field Effect Transistor (FET),

wherein said by-pass switch by-passes said doubling means upon application of a switching gate voltage to said FET causing the output frequency to be equal to the input frequency, and

said by-pass switch comprises an active load for providing a variable load on said mixing means.

27. (original): A doubler according to claim 26, wherein said FET comprises a MOSFET.

28. (original): A transceiver comprising:

a first adaptive amplifier having an output comprising a first frequency f_1 , said amplifier comprising amplification means and active matching means for providing active matching at an input and output of said amplification means;

a first mixer having a first input comprising the output of said adaptive amplifier and a second input comprising a reference signal having a reference frequency f_2 , said mixer comprising:

mixing means for mixing the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- , where:

$$f_+ = f_1 + f_2,$$

$$f_- = \text{absolute value } (f_1 - f_2), \text{ and}$$

active load means for providing a variable load on said mixing means; and

a first intermediate frequency amplifier,

wherein the output of said first mixer is input to said first intermediate frequency amplifier.

29. (original): A transceiver according to Claim 28, further comprising:

a second intermediate frequency amplifier having an output;

a limiter having an output comprising a third frequency f_3 , said limiter comprising active load means for providing a variable load;

a second mixer having a first input comprising the output of said limiter and a second input comprising the reference signal with frequency f_2 , said mixer comprising:

mixing means for mixing the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- , where:

$$f_+ = f_3 + f_2,$$

$$f_- = \text{absolute value } (f_3 - f_2), \text{ and}$$

active load means for providing a variable load on said mixing means; and

a second adaptive amplifier comprising amplification means and active matching means for providing active matching at an input and output of said amplification means,

wherein the output of said second intermediate frequency amplifier is input to said limiter, and the output of said second mixer is input to said second adaptive amplifier.

30. (original): A transceiver according to claim 29, further comprising:

a doubler having an output and comprising:

doubling means for outputting an output frequency which is double an input frequency, and

an active by-pass switch comprising a Field Effect Transistor (FET) and by-passing said doubling means upon application of a switching gate voltage to said FET causing the output frequency to be equal to the input frequency; and

a buffer amplifier outputting the reference signal having the reference frequency f_2 to said first and second mixers,

wherein the output of said doubler is input to said buffer amplifier.

31. (original): A transceiver comprising:

an intermediate frequency amplifier having an output;

a limiter having an output comprising a first frequency f_1 , said limiter comprising active load means for providing a variable load;

a mixer having a first input comprising the output of said limiter and a second input comprising a reference frequency f_2 , said mixer comprising:

mixing means for mixing the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- , where:

$$f_+ = f_1 + f_2,$$

$$f_- = \text{absolute value } (f_1 - f_2), \text{ and}$$

active load means for providing a variable load on said mixing means; and

an adaptive amplifier comprising amplification means and active matching means for providing active matching at an input and output of said amplification means,

wherein the output of said intermediate frequency amplifier is input to said limiter, and the output of said mixer is input to said adaptive amplifier.

32. (new): A mixer having a first input comprising a first frequency f_1 and a second input comprising a second frequency f_2 , said mixer comprising:

a mixer circuit which mixes the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- , where:

$$f_+ = f_1 + f_2,$$

$$f_- = \text{absolute value } (f_1 - f_2); \text{ and}$$

an active load comprising a Field Effect Transistor (FET),

wherein said active load is electrically connected to said mixer circuit and provides a variable load on said mixing means.

33. (new): A mixer according to claim 32, wherein said FET comprises a MOSFET.

34. (new): A doubler comprising:

a doubler circuit which outputs an output frequency which is double an input frequency;

a mixer circuit; and

a by-pass switch comprising a Field Effect Transistor (FET),

wherein said by-pass switch by-passes said doubler circuit upon application of a switching gate voltage to said FET causing the output frequency to be equal to the input frequency, and

said by-pass switch comprises an active load for providing a variable load on said mixer circuit.

35. (new): A doubler according to claim 34, wherein said FET comprises a MOSFET.

36. (new): A transceiver comprising:

a first adaptive amplifier having an output comprising a first frequency f_1 , said amplifier comprising an amplifier circuit and an active matching circuit which provides active matching at an input and output of said amplifier circuit;

a first mixer having a first input comprising the output of said adaptive amplifier and a second input comprising a reference signal having a reference frequency f_2 , said mixer comprising:

a mixer circuit which mixes the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- ,
where:

$$f_+ = f_1 + f_2,$$

f_- = absolute value ($f_1 - f_2$), and

an active load which provides a variable load on said mixer circuit; and

a first intermediate frequency amplifier,

wherein the output of said first mixer is input to said first intermediate frequency amplifier.

37. (new): A transceiver according to Claim 36, further comprising:

a second intermediate frequency amplifier having an output;

a limiter having an output comprising a third frequency f_3 , said limiter comprising active load means for providing a variable load;

a second mixer having a first input comprising the output of said limiter and a second input comprising the reference signal with frequency f_2 , said mixer comprising:

a mixer circuit which mixes the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- ,

where:

$$f_+ = f_3 + f_2,$$

$$f_- = \text{absolute value } (f_3 - f_2), \text{ and}$$

an active load which provides a variable load on said mixer circuit; and

a second adaptive amplifier comprising an amplifier circuit and an active matching circuit for providing active matching at an input and output of said amplifier circuit,

wherein the output of said second intermediate frequency amplifier is input to said limiter, and the output of said second mixer is input to said second adaptive amplifier.

38. (new): A transceiver according to claim 37, further comprising:

a doubler having an output and comprising:

a doubler circuit which outputs an output frequency which is double an input frequency,
and

an active by-pass switch comprising a Field Effect Transistor (FET) and by-passing said doubler circuit upon application of a switching gate voltage to said FET causing the output frequency to be equal to the input frequency; and

a buffer amplifier outputting the reference signal having the reference frequency f_2 to said first and second mixers,

wherein the output of said doubler is input to said buffer amplifier.

39. (new): A transceiver comprising:

an intermediate frequency amplifier having an output;

a limiter having an output comprising a first frequency f_1 , said limiter comprising an active load circuit for providing a variable load;

a mixer having a first input comprising the output of said limiter and a second input comprising a reference frequency f_2 , said mixer comprising:

a mixer circuit which mixes the first and second inputs to produce an output having an additive frequency component f_+ and a difference frequency component f_- ,

where:

$$f_+ = f_1 + f_2,$$

$$f_- = \text{absolute value } (f_1 - f_2), \text{ and}$$

an active load which provides a variable load on said mixer circuit; and

an adaptive amplifier comprising an amplifier circuit and an active matching circuit which provides active matching at an input and output of said amplifier circuit,

wherein the output of said intermediate frequency amplifier is input to said limiter, and the output of said mixer is input to said adaptive amplifier.